B135. STP link capacity

Definition

The maximum number of signaling links that can be terminated on a given STP pair.

Default Value

720

B136. STP maximum fill

Definition

The fraction of maximum links, as stated by the STP link capacity input, that the model assumes can be utilized before it adds another STP pair.

Default Value

0.8

B137. STP maximum investment, per pair

Definition

The cost to purchase and install an STP pair, fully equipped for the maximum number of links.

Default Value

Maximum investment: $5,000,000

B138. STP minimum common equipment investment, per pair

Definition

The minimum investment for a minimum-capacity STP, i.e.: the fixed investment for an STP pair that serves a minimum number of links.

Default Value

$1,000,000

B139. Link termination, both ends

Definition

The investment required for the transmission equipment that terminates both ends of an SS7 signaling link.

Default Value

$900.00

B140. Signaling link bit rate

Definition

The rate at which bits are transmitted over an SS7 signaling link.

Default Value

56,000 bits per second

B141. Link occupancy

Definition

The fraction of the maximum bit rate that can be sustained on an SS7 signaling link.

Default Value

0.40

B142. C link cross-section

Definition

The number of C-links in each segment connecting a mated STP pair.

Default Value

24

B143. ISUP messages per interoffice BHCA

Definition

The number of Integrated Services Digital Network User Part (ISUP) messages associated with each interoffice telephone call attempt, i.e. the messages switches send to each other over the SS7 network to negotiate establishing a voice path.

Default Value

6

B144. ISUP message length, bytes

Definition

The average number of bytes in each ISUP (ISDN User Part) message.

Default Value

25 bytes

B145. TCAP messages per transaction

Definition

The number of Transaction Capabilities Application Part (TCAP) messages required per SCP database query. A TCAP message is a message from a switch to a database or another switch that provides the switch with additional information prior to setting up a call or completing a call.

Default Value

2

B146. TCAP message length, bytes

Definition

The average length of a TCAP message.

Default Value

100 bytes

B147. Fraction of BHCA requiring TCAP

Definition

The percentage of BHCAs that require a database query, and thus generate TCAP messages.

Default Value

0.10

B148. SCP investment per transaction per second

Definition

The investment in the Service Control Point (SCP) associated with database queries, or transactions, stated as the investment required per transaction per second. For example, an SCP required to handle 100 transactions per second would require a 2 million dollar investment, if the default of $20,000 is assumed.

Default Value

$20,000

B149. Investment per operator position

Definition

The investment per computer required for each operator position.

Default Value

$6,400

B150. Maximum utilization per position, CCS

Definition

The estimated maximum number of CCS that one operator position can handle during the busy hour.

Default Value

32

B151. Operator intervention factor

Definition

The percentage of all operator-assisted calls that require operator intervention, expressed as 1 out of every

N calls, where N is the value of the input. Given the default values for operator-assisted calls, this parameter means that 1/10 or 10% of the assisted calls actually require manual intervention of an operator, as opposed to *automated* operator assistance for credit card calls, etc.

Default Value

10

B152. Public Telephone equipment investment per station

Definition

The weighted average cost of a public telephone and pedestal (coin/non-coin and indoor/outdoor).

Default Value

$760

B153. ICO STP Investment per Line

Definition

The surrogate value for the per line investment in a signal transfer point by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$5.50

B154. Per Line ICO Local Tandem Investment

Definition

The surrogate value for the per line investment in a local tandem switch by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$1.90

B155. Per Line ICO OS Tandem Investment

Definition

The surrogate value for the per line investment in an Operator Services tandem switch by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$0.80

B156. Per Line ICO SCP Investment

Definition

The surrogate value for the per line investment in a SCP by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$2.50

B157. Per Line ICO STP/SCP Wire Center Investment

Definition

The surrogate value for the per line investment in an STP/SCP wire center by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$.40

B158. Per Line ICO Local Tandem Wire Center Investment

Definition

The surrogate value for the per line investment in a local tandem wire center by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$2.50

B159. Per Line ICO OS Tandem Wire Center Investment

Definition

The surrogate value for the per line investment in a operator services tandem wire center by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$1.00

B160. Per Line ICO C-Link / Tandem A-Link Investment

Definition

The surrogate value for the per line investment in a C-link / tandem A-link by an independent telephone company (ICO), in lieu of calculating it directly in the model.

Default Value

$0.30

B161. Cost of capital

Definition

The capital cost structure, including the debt/equity ratio, cost of debt, and return on equity, that make up the overall cost of capital.

Default Values

Debt percent	0.450
Cost of debt	0.077
Cost of equity	0.119
Weighted average cost of capital	*0.1001*

B162. Depreciation Lives and Net Salvage Percentages

Definition

The economic life of various network plant categories.

Default Value

Plant Type	Economic Life	Net Salvage %
motor vehicles	8.24	11.21
garage work equipment	12.22	-10.71
other work equipment	13.04	3.21
buildings	46.93	1.87
furniture	15.92	6.88
office support equipment	10.78	6.91
company comm. Equipment	7.40	3.76
general purpose computers	6.12	3.73
digital electronic switching	16.17	2.97
operator systems	9.41	-0.82
digital circuit equipment	10.24	-1.69
public telephone term. Equipment	7.60	7.97
Poles	30.25	-89.98
aerial cable, metallic	20.61	-23.03
aerial cable, non metallic	26.14	-17.53
underground cable, metallic	25.00	-18.26
underground cable, non metallic	26.45	-14.58
buried cable, metallic	21.57	-8.39
buried cable, non metallic	25.91	-8.58
intrabuilding cable, metallic	18.18	-15.74
intrabuilding cable, non metallic	26.11	-10.52
conduit systems	56.19	-10.34

B 163. Structure Percentage Assigned to Telephone

Definition

The fraction of investment in distribution and feeder poles and trenching that is assigned to LECs. The remainder is attributed to other utilities/carriers.

Default Values

Structure Percent Assigned to Telephone Company						
	Distribution			Feeder		
Density Zone	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	.50	.33	1.00	.50	.40	.50
5-100	.33	.33	.50	.33	.40	.50
100-200	.25	.33	.50	.25	.40	.40
200-650	.25	.33	.50	.25	.40	.33
650-850	.25	.33	.40	.25	.40	.33
850-2,550	.25	.33	.33	.25	.40	.33
2,550-5,000	.25	.33	.33	.25	.40	.33
5,000-10,000	.25	.33	.33	.25	.40	.33
10,000+	.25	.33	.33	.25	.40	.33

B164. Income tax rate

Definition

The combined federal and state income tax rate on earnings paid by a telephone company.

Default Value

39.25%

B165. Variable overhead factor

Definition

The variable component of corporate overhead costs, expressed as a fraction of the sum of all capital costs and operations expenses calculated by the model.

Default Value

10.4%

B166. Other taxes factor

Definition

Taxes paid by a telephone company in addition to federal and state income taxes.

Default Value

5%

B167. Billing/bill inquiry per line per month

Definition

The cost of bill generation and billing inquiries for end users, expressed as an amount per line per month.

Default Value

$1.22

B168. Directory listing per line per month

Definition

The monthly cost of creating and maintaining white pages listings on a per line, per month basis.

Default Value

$0.15

B169. Forward-looking network operations factor

Definition

The forward-looking factor applied to a specific category of expenses reported in ARMIS called Network Operations. The factor is expressed as the percentage of current ARMIS-reported Network Operations.

Default Value

50%

B170. Alternative Central office switching expense factor

Definition

The expense to investment ratio for digital switching equipment, used as an alternative to the ARMIS expense ratio, reflecting forward looking rather than embedded costs. Thus, this factor multiplies the calculated investment in digital switching in order to determine the monthly expense associated with digital switching. This value does not include software upgrades to the switch.

Default Value

2.69%

B171. Alternative circuit equipment factor

Definition

The expense to investment ratio for all circuit equipment (as categorized by LECs in their ARMIS reports), used as an alternative to the ARMIS expense ratio to reflect forward looking rather than embedded costs.

Default Value

0.0153

B172. End office non line-port cost fraction

Definition

The fraction of the total investment in digital switching that is assumed to be due to traffic-sensitive elements and is thus usage-sensitive. This value shows how much of the cost of an end office is associated with the line port as opposed to usage.

Default Value

70%

B173. Per-line monthly LNP cost

Definition

The estimated cost of permanent Local Number Portability (LNP), expressed on a per-line, per-month basis, including the costs of implementing and maintaining the service. This is included in the USF calculations only, not the UNE rates, because it will be included in the definition of universal service once the service is implemented.

Default Value

$0.25

B174. Carrier-carrier customer service per line

Definition

The yearly amount of customer operations expense associated with the provision of unbundled network elements by the LECs to carriers who purchase those elements.

Default Value

$1.69

B175. NID expense per line per year

Definition

The estimated annual NID expense on a per line basis, based on an analysis of ARMIS data modified to reflect forward looking costs. This is for the NID only, not the drop wire, which is included in the ARMIS cable and wire account.

Default Value

$1.00/line/year

B176. DS-0/DS-1 Terminal Factor

Definition

The relative terminal investment per DS-0, between the DS-1 and DS-0 levels.

Default Value

12.4

B177. DS-1/DS-3 Terminal Factor

Definition

The relative investment per DS-0, between the DS-3 and DS-1 levels.

Default

9.9

B178. Average Lines per Business Location

Definition

The average number of business lines per business location, used to calculate NID and drop cost.

Default

4

B179. Average trunk utilization

Definition

The 24 hour average utilization of an interoffice trunk.

Default Value

0.30

EXCAVATION AND RESTORATION PARAMETERS

B180. Underground Excavation, Cost per Foot

Definition

The cost per foot to dig a trench in connection with building an underground conduit system to facilitate the placement of underground cables. Cutting the surface, placing the 4" PVC conduit pipes, backfilling the trench with appropriately screened fill, and restoring surface conditions is covered in the following section titled, "Underground Restoration Cost per Foot." These two sections do not include the material cost of the PVC conduit pipe, which is covered under "Conduit Material Investment per foot."

Default Value

Underground Excavation, Cost per Foot					
	Trenching	Backhoe		Hand Trench	
Density Zone	Per Foot	Fraction	Per Foot	Fraction	Per Foot
0-5	$1.90	45.00%	$3.00	1.00%	$5.00
5-100	$1.90	45.00%	$3.00	1.00%	$5.00
100-200	$1.90	45.00%	$3.00	1.00%	$5.00
200-650	$1.90	45.00%	$3.00	3.00%	$5.00
650-850	$1.95	45.00%	$3.00	3.00%	$5.00
850-2,550	$2.15	45.00%	$3.00	5.00%	$5.00
2,550-5,000	$2.15	55.00%	$3.00	10.00%	$5.00
5,000-10,000	$6.00	67.00%	$20.00	10.00%	$10.00
10,000+	$6.00	72.00%	$30.00	12.00%	$18.00

Note: Fraction % for Trenching is the fraction remaining after subtracting Backhoe % & Trench %.

B181. Underground Restoration, Cost per Foot

Definition

The cost per foot to cut the surface, place the 4" PVC conduit pipes, backfill the trench with appropriately screened fill, and restore surface conditions. Digging a trench in connection with building an underground conduit system to facilitate the placement of underground cables is covered in the preceding section titled, "Distribution Underground Excavation Cost per Foot." These two sections do not include the material cost of the PVC conduit pipe, which is covered under "Conduit Material Investment per foot."

Default Value

Distribution Underground Restoration Cost per Foot									
Density Zone	Cut/Restore Asphalt		Cut/Restore Concrete		Cut/Restore Sod		Simple Backfill	Conduit Placement & Stabilization	
	Fraction	Per Foot	Fraction	Per Foot	Fraction	Per Foot	Per Foot	Pavement Per Foot	Dirt Per Foot
0-5	55.00%	$6.00	10.00%	$9.00	1.00%	$1.00	$0.15	$5.00	$1.00
5-100	55.00%	$6.00	10.00%	$9.00	1.00%	$1.00	$0.15	$5.00	$1.00
100-200	55.00%	$6.00	10.00%	$9.00	1.00%	$1.00	$0.15	$5.00	$1.00
200-650	65.00%	$6.00	10.00%	$9.00	3.00%	$1.00	$0.15	$5.00	$1.00
650-850	70.00%	$6.00	10.00%	$9.00	4.00%	$1.00	$0.15	$5.00	$1.00
850-2,550	75.00%	$6.00	10.00%	$9.00	6.00%	$1.00	$0.15	$9.00	$4.00
2,550-5,000	75.00%	$6.00	15.00%	$9.00	4.00%	$1.00	$0.15	$13.00	$11.00
5,000-10,000	80.00%	$18.00	15.00%	$21.00	2.00%	$1.00	$0.15	$17.00	$12.00
10,000+	82.00%	$30.00	16.00%	$36.00	0.00%	$1.00	$0.15	$20.00	$16.00

Note: Fraction % for Simple Backfill is the fraction remaining after subtracting Asphalt % & Concrete % & Sod %.

B182. Buried Excavation, Cost per Foot

Definition

The cost per foot to dig a trench to allow buried placement of cables, or the plowing of one or more cables into the earth using a single or multiple sheath plow.

Default Value

Buried Excavation Costs per Foot									
	Plow		Trench	Backhoe		Hand Trench		Bore Cable	
Density ZoneRange	Fraction	Per Foot	Per Foot	Fraction	Per Foot	Fraction	Per Foot	Fraction	Per Foot
0-5	60.00%	$0.80	$1.90	10.00%	$3.00	0.00%	$5.00	0.00%	$11.00
5-100	60.00%	$0.80	$1.90	10.00%	$3.00	0.00%	$5.00	0.00%	$11.00
100-200	60.00%	$0.80	$1.90	10.00%	$3.00	0.00%	$5.00	0.00%	$11.00
200-650	50.00%	$0.80	$1.90	10.00%	$3.00	1.00%	$5.00	0.00%	$11.00
650-850	35.00%	$0.80	$1.95	10.00%	$3.00	2.00%	$5.00	0.00%	$11.00
850-2,550	20.00%	$1.20	$2.15	10.00%	$3.00	4.00%	$5.00	3.00%	$11.00
2,550-5,000	0.00%	$1.20	$2.15	10.00%	$3.00	5.00%	$5.00	4.00%	$11.00
5,000-10,000	0.00%	$1.20	$6.00	10.00%	$20.00	6.00%	$10.00	5.00%	$11.00
10,000+	0.00%	$1.20	$15.00	25.00%	$30.00	10.00%	$18.00	5.00%	$18.00

Note: Fraction % for Regular Trenching is the fraction remaining after subtracting Plow %, Backhoe %, Hand Trench %, and Bore Cable %.

B183. Buried Installation and Restoration, Cost per Foot

Definition

The cost per foot to push pipe under pavement , or the costs per foot to cut the surface, place cable in a trench, backfill the trench with appropriately screened fill, and restore surface conditions. Digging a trench in connection with placing buried cable is covered in the preceding section titled, "Distribution Buried Excavation Cost per Foot".

Default Value

Distribution Buried Installation and Restoration Costs per Foot										
Density Zone	Push Pipe/ Pull Cable		Cut/Restore Asphalt		Cut/Restore Concrete		Cut/Restore Sod		Restoral Not Req'd	Simple Backfill
	Fraction	Per Foot	Fraction	Per Foot	Fraction	Per Foot	Fraction	Per Foot	Fraction	Per Foot
0-5	2.00%	$6.00	3.00%	$6.00	1.00%	$9.00	2.00%	$1.00	62.00%	$0.15
5-100	2.00%	$6.00	3.00%	$6.00	1.00%	$9.00	2.00%	$1.00	62.00%	$0.15
100-200	2.00%	$6.00	3.00%	$6.00	1.00%	$9.00	2.00%	$1.00	62.00%	$0.15
200-650	2.00%	$6.00	3.00%	$6.00	1.00%	$9.00	2.00%	$1.00	52.00%	$0.15
650-850	2.00%	$6.00	3.00%	$6.00	1.00%	$9.00	2.00%	$1.00	37.00%	$0.15
850-2,550	4.00%	$6.00	5.00%	$6.00	3.00%	$9.00	35.00%	$1.00	27.00%	$0.15
2,550-5,000	5.00%	$6.00	8.00%	$6.00	5.00%	$9.00	35.00%	$1.00	9.00%	$0.15
5,000-10,000	6.00%	$6.00	18.00%	$18.00	8.00%	$21.00	11.00%	$1.00	11.00%	$0.15
10,000+	6.00%	$24.00	60.00%	$30.00	20.00%	$36.00	5.00%	$1.00	11.00%	$0.15

Note: Restoral is not required for plowing nor for pushing pipe & pulling cable. Fraction % for Simple Backfill is the fraction remaining after subtracting Restoral Not Required %.

B184. Surface Texture Effect

Definition

The increase in placement cost attributable to the soil condition in a CBG, which applies to the structure investment determined by the CBG's density zone.

Default Value

Fraction CBG Affected	Effect	Texture	Description of Texture
1.00	1.00		Blank
1.00	1.00	BY	Bouldery
1.00	1.00	BY-COS	Bouldery Coarse Sand
1.00	1.00	BY-FSL	Bouldery & Fine Sandy Loam
1.00	1.00	BY-L	Bouldery & Loam
1.00	1.00	BY-LS	Bouldery & Sandy Loam
1.00	1.00	BY-SICL	Bouldery & Silty Clay Loam
1.00	1.00	BY-SL	Bouldery & Sandy Loam
1.00	1.10	BYV	Very Bouldery
1.00	1.10	BYV-FSL	Very Bouldery & Fine Sandy Loam
1.00	1.10	BYV-L	Very bouldery & Loamy
1.00	1.10	BYV-LS	Very Bouldery & Loamy Sand
1.00	1.10	BYV-SIL	Very Bouldery & Silt
1.00	1.10	BYV-SL	Very Bouldery & Sandy Loam
1.00	1.30	BYX	Extremely Bouldery
1.00	1.30	BYX-FSL	Extremely Bouldery & Fine Sandy Loam
1.00	1.30	BYX-L	Extremely Bouldery & Loamy
1.00	1.30	BYX-SIL	Extremely Bouldery & Silt Loam
1.00	1.30	BYX-SL	Extremely Bouldery & Sandy Loam

1.00	1.00	C	Clay
1.00	1.00	CB	Cobbly
1.00	1.00	CB-C	Cobbly & Clay
1.00	1.00	CB-CL	Cobbly & Clay Loam
1.00	1.00	CB-COSL	Cobbly & Coarse Sandy Loam
1.00	1.10	CB-FS	Cobbly & Fine Sand
1.00	1.10	CB-FSL	Cobbly & Fine Sandy Loam
1.00	1.00	CB-L	Cobbly & Loamy
1.00	1.00	CB-LCOS	Cobbly & Loamy coarseSand
1.00	1.00	CB-LS	Cobbly & Loamy Sand
1.00	1.10	CB-S	Cobbly & Sand
1.00	1.00	CB-SCL	Cobbly & Sandy Clay Loam
1.00	1.00	CB-SICL	Cobbly & Silty Clay Loam
1.00	1.00	CB-SIL	Cobbly & Silt Loam
1.00	1.10	CB-SL	Cobbly & Sandy Loam
1.00	1.00	CBA	Angular Cobbly
1.00	1.10	CBA-FSL	Angular Cobbly & Fine Sandy Loam
1.00	1.20	CBV	Very Cobbly
1.00	1.20	CBV-C	Very Cobbly & Clay
1.00	1.20	CBV-CL	Very Cobbly & Clay Loam
1.00	1.20	CBV-FSL	Very Cobbly & Fine Sandy Loam
1.00	1.20	CBV-L	Very Cobbly & Loamy
1.00	1.20	CBV-LFS	Very Cobbly & Fine Loamy Sand
1.00	1.20	CBV-LS	Very Cobbly & Loamy Sand
1.00	1.20	CBV-MUCK	Very Cobbly & Muck
1.00	1.20	CBV-SCL	Very Cobbly & Sandy Clay Loam
1.00	1.20	CBV-SIL	Very Cobbly & Silt
1.00	1.20	CBV-SL	Very Cobbly & Sandy Loam
1.00	1.20	CBV-VFS	Very Cobbly & Very Fine Sand
1.00	1.20	CBX	Extremely Cobbly
1.00	1.20	CBX-CL	Extremely Cobbly & Clay
1.00	1.20	CBX-L	Extremely Cobbly Loam
1.00	1.20	CBX-SIL	Extremely Cobbly & Silt
1.00	1.20	CBX-SL	Extremely Cobbly &Sandy Loam
1.00	1.30	CBX-VFSL	Extremely Cobbly Very Fine Sandy Loam
1.00	1.00	CE	Coprogenous Earth
1.00	1.00	CIND	Cinders
1.00	1.00	CL	Clay Loam
1.00	1.30	CM	Cemented
1.00	1.00	CN	Channery
1.00	1.00	CN-CL	Channery & Clay Loam
1.00	1.10	CN-FSL	Channery & Fine Sandy Loam
1.00	1.00	CN-L	Channery & Loam
1.00	1.00	CN-SICL	Channery & Silty Clay Loam
1.00	1.00	CN-SIL	Channery & Silty Loam
1.00	1.00	CN-SL	Channery & Sandy Loam
1.00	1.00	CNV	Very Channery
1.00	1.00	CNV-CL	Very Channery & Clay
1.00	1.00	CNV-L	Very Channery & Loam

1.00	1.00	CNV-SCL	Channery & Sandy Clay Loam
1.00	1.00	CNV-SIL	Very Channery & Silty Loam
1.00	1.00	CNV-SL	Very Channery & Sandy Loam
1.00	1.00	CNX	Extremely Channery
1.00	1.00	CNX-SL	Extremely Channery & Sandy Loam
1.00	1.00	COS	Coarse Sand
1.00	1.00	COSL	Coarse Sandy Loam
1.00	1.20	CR	Cherty
1.00	1.20	CR-L	Cherty & Loam
1.00	1.20	CR-SICL	Cherty & Silty Clay Loam
1.00	1.20	CR-SIL	Cherty & Silty Loam
1.00	1.20	CR-SL	Cherty & Sandy Loam
1.00	1.20	CRC	Coarse Cherty
1.00	1.20	CRV	Very Cherty
1.00	1.20	CRV-L	Very Cherty & Loam
1.00	1.20	CRV-SIL	Very Cherty & Silty Loam
1.00	1.30	CRX	Extremely Cherty
1.00	1.30	CRX-SIL	Extremely Cherty & Silty Loam
1.00	1.00	DE	Diatomaceous Earth
1.00	1.00	FB	Fibric Material
1.00	1.00	FINE	Fine
1.00	1.00	FL	Flaggy
1.00	1.10	FL-FSL	Flaggy & Fine Sandy Loam
1.00	1.00	FL-L	Flaggy & Loam
1.00	1.00	FL-SIC	Flaggy & Silty Clay
1.00	1.00	FL-SICL	Flaggy & Silty Clay Loam
1.00	1.00	FL-SIL	Flaggy & Silty Loam
1.00	1.00	FL-SL	Flaggy & Sandy Loam
1.00	1.10	FLV	Very Flaggy
1.00	1.10	FLV-COSL	Very Flaggy & Coarse Sandy Loam
1.00	1.10	FLV-L	Very Flaggy & Loam
1.00	1.10	FLV-SICL	Very Flaggy & Silty Clay Loam
1.00	1.10	FLV-SL	Very Flaggy & Sandy Loam
1.00	1.10	FLX	Extremely Flaggy
1.00	1.10	FLX-L	Extremely Flaggy & Loamy
1.00	1.00	FRAG	Fragmental Material
1.00	1.10	FS	Fine Sand
1.00	1.10	FSL	Fine Sandy Loam
1.00	1.00	G	Gravel
1.00	1.00	GR	Gravelly
1.00	1.00	GR-C	Gravel & Clay
1.00	1.00	GR-CL	Gravel & Clay Loam
1.00	1.00	GR-COS	Gravel & Coarse Sand
1.00	1.00	GR-COSL	Gravel & Coarse Sandy Loam
1.00	1.00	GR-FS	Gravel & Fine Sand
1.00	1.00	GR-FSL	Gravel & Fine Sandy Loam
1.00	1.00	GR-L	Gravel & Loam
1.00	1.00	GR-LCOS	Gravel & Loamy Coarse Sand
1.00	1.10	GR-LFS	Gravel & Loamy Fine Sand

1.00	1.00	GR-LS	Gravel & Loamy Sand
1.00	1.00	GR-MUCK	Gravel & Muck
1.00	1.00	GR-S	Gravel & Sand
1.00	1.00	GR-SCL	Gravel & Sandy Clay Loam
1.00	1.00	GR-SIC	Gravel & Silty Clay
1.00	1.00	GR-SICL	Gravel & Silty Clay Loam
1.00	1.00	GR-SIL	Gravel & Silty Loam
1.00	1.00	GR-SL	Gravel & Sandy Loam
1.00	1.10	GR-VFSL	Gravel & Very Fine Sandy Loam
1.00	1.00	GRC	Coarse Gravelly
1.00	1.00	GRF	Fine Gravel
1.00	1.00	GRF-SIL	Fine Gravel Silty Loam
1.00	1.00	GRV	Very Gravelly
1.00	1.00	GRV-CL	Very gravelly & Clay Loam
1.00	1.00	GRV-COS	Very Gravelly & coarse Sand
1.00	1.00	GRV-COSL	Very Gravelly & coarse Sandy Loam
1.00	1.00	GRV-FSL	Very Gravelly & Fine Sandy Loam
1.00	1.00	GRV-L	Very Gravelly & Loam
1.00	1.00	GRV-LCOS	Very Gravelly & Loamy Coarse Sand
1.00	1.00	GRV-LS	Very Gravelly & Loamy Sand
1.00	1.00	GRV-S	Very Gravelly & Sand
1.00	1.00	GRV-SCL	Very Gravelly & Sandy Clay Loam
1.00	1.00	GRV-SICL	Very Gravelly & Silty Clay Loam
1.00	1.00	GRV-SIL	Very Gravelly & Silt
1.00	1.00	GRV-SL	Very Gravelly & Sandy Loam
1.00	1.00	GRV-VFS	Very Gravelly & Very Fine Sand
1.00	1.00	GRV-VFSL	Very Gravelly & Very Fine Sandy Loam
1.00	1.10	GRX	Extremely Gravelly
1.00	1.10	GRX-CL	Extremely Gravelly & Coarse Loam
1.00	1.10	GRX-COS	Extremely Gravelly & Coarse Sand
1.00	1.10	GRX-COSL	Extremely Gravelly & Coarse Sandy Loam
1.00	1.10	GRX-FSL	Extremely Gravelly & Fine Sand Loam
1.00	1.10	GRX-L	Extremely Gravelly & Loam
1.00	1.10	GRX-LCOS	Extremely Gravelly & Loamy Coarse
1.00	1.10	GRX-LS	Extremely Gravelly & Loamy Sand
1.00	1.10	GRX-S	Extremely Gravelly & Sand
1.00	1.10	GRX-SIL	Extremely Gravelly & Silty Loam
1.00	1.10	GRX-SL	Extremely Gravelly & Sandy Loam
1.00	1.20	GYP	Gypsiferous Material
1.00	1.00	HM	Hemic Material
1.00	1.50	ICE	Ice or Frozen Soil
1.00	1.20	IND	Indurated
1.00	1.00	L	Loam
1.00	1.00	LCOS	Loamy Coarse Sand
1.00	1.10	LFS	Loamy Fine Sand
1.00	1.00	LS	Loamy Sand
1.00	1.00	LVFS	Loamy Very Fine Sand
1.00	1.00	MARL	Marl
1.00	1.00	MEDIUM coarse	Medium Coarse

1.00	1.00	MK	Mucky
1.00	1.00	MK-C	Mucky Clay
1.00	1.00	MK-CL	Mucky Clay Loam
1.00	1.00	MK-FS	Muck & Fine Sand
1.00	1.00	MK-FSL	Muck & Fine Sandy Loam
1.00	1.00	MK-L	Mucky Loam
1.00	1.00	MK-LFS	Mucky Loamy Fine Sand
1.00	1.00	MK-LS	Mucky Loamy Sand
1.00	1.00	MK-S	Muck & Sand
1.00	1.00	MK-SI	Mucky & Silty
1.00	1.00	MK-SICL	Mucky & Silty Clay Loam
1.00	1.00	MK-SIL	Mucky Silt
1.00	1.00	MK-SL	Mucky & Sandy Loam
1.00	1.00	MK-VFSL	Mucky & Very Fine Sandy Loam
1.00	1.00	MPT	Mucky Peat
1.00	1.00	MUCK	Muck
1.00	1.00	PEAT	Peat
1.00	1.00	PT	Peaty
1.00	1.50	RB	Rubbly
1.00	1.50	RB-FSL	Rubbly Fine Sandy Loam
1.00	1.00	S	Sand
1.00	1.00	SC	Sandy Clay
1.00	1.00	SCL	Sandy Clay Loam
1.00	1.00	SG	Sand & Gravel
1.00	1.00	SH	Shaly
1.00	1.00	SH-CL	Shaly & Clay
1.00	1.00	SH-L	Shale & Loam
1.00	1.00	SH-SICL	Shaly & Silty Clay Loam
1.00	1.00	SH-SIL	Shaly & Silt Loam
1.00	1.50	SHV	Very Shaly
1.00	1.50	SHV-CL	Very Shaly & Clay Loam
1.00	2.00	SHX	Extremely Shaly
1.00	1.00	SI	Silt
1.00	1.00	SIC	Silty Clay
1.00	1.00	SICL	Silty Clay Loam
1.00	1.00	SIL	Silt Loam
1.00	1.00	SL	Sandy Loam
1.00	1.00	SP	Sapric Material
1.00	1.00	SR	Stratified
1.00	1.00	ST	Stony
1.00	1.00	ST-C	Stony & Clay
1.00	1.00	ST-CL	Stony & Clay Loam
1.00	1.00	ST-COSL	Stony & Coarse Sandy Loam
1.00	1.10	ST-FSL	Stony & Fine Sandy Loam
1.00	1.00	ST-L	Stony & Loamy
1.00	1.00	ST-LCOS	Stony & Loamy Coarse Sand
1.00	1.10	ST-LFS	Stony & Loamy Fine Sand
1.00	1.00	ST-LS	Stony & Loamy Sand
1.00	1.00	ST-SIC	Stony & Silty Clay

1.00	1.00	ST-SICL	Stony & Silty Clay Loam
1.00	1.00	ST-SIL	Stony & Silt Loam
1.00	1.00	ST-SL	Stony & Sandy Loam
1.00	1.10	ST-VFSL	Stony & Sandy Very Fine Silty Loam
1.00	1.20	STV	Very Stony
1.00	1.20	STV-C	Very Stony & Clay
1.00	1.20	STV-CL	Very Stony & Clay Loam
1.00	1.20	STV-FSL	Very Stony & Fine Sandy Loam
1.00	1.20	STV-L	Very Stony & Loamy
1.00	1.20	STV-LFS	Very Stony & Loamy Fine Sand
1.00	1.20	STV-LS	Very Stony & Loamy Sand
1.00	1.20	STV-MPT	Very Stony & Mucky Peat
1.00	1.20	STV-MUCK	Very Stony & Muck
1.00	1.20	STV-SICL	Very Stony & Silty Clay Loam
1.00	1.20	STV-SIL	Very Stony & Silty Loam
1.00	1.20	STV-SL	Very Stony & Sandy Loam
1.00	1.20	STV-VFSL	Very Stony & Very Fine Sandy Loam
1.00	1.30	STX	Extremely Stony
1.00	1.30	STX-C	Extremely Stony & Clay
1.00	1.30	STX-CL	Extremely Stony & Clay Loam
1.00	1.30	STX-COS	Extremely Stony & Coarse Sand
1.00	1.30	STX-COSL	Extremely Stony & Coarse Sand Loam
1.00	1.30	STX-FSL	Extremely Stony & Fine Sandy Loam
1.00	1.30	STX-L	Extremely Stony & Loamy
1.00	1.30	STX-LCOS	Extremely Stony & Loamy Coarse Sand
1.00	1.30	STX-LS	Extremely Stony & Loamy Sand
1.00	1.30	STX-MUCK	Extremely Stony & Muck
1.00	1.30	STX-SIC	Extremely Stony & Silty Clay
1.00	1.30	STX-SICL	Extremely Stony & Silty Clay Loam
1.00	1.30	STX-SIL	Extremely Stony & Silty Loam
1.00	1.30	STX-SL	Extremely Stony & Sandy Loam
1.00	1.30	STX-VFSL	Extremely Stony & Very Fine Sandy Loam
1.00	3.00	SY	Slaty
1.00	3.00	SY-L	Slaty & Loam
1.00	3.00	SY-SIL	Slaty & Silty Loam
1.00	3.50	SYV	Very Slaty
1.00	4.00	SYX	Extremely Slaty
1.00	1.00	UNK	Unknown
1.00	2.00	UWB	Unweathered Bedrock
1.00	1.00	VAR	Variable
1.00	1.00	VFS	Very Fine Sand
1.00	1.00	VFSL	Very Fine Sandy loam
1.00	3.00	WB	Weathered Bedrock

4

Hatfield Model Release 4.0

Automation Description and User Guide

Table of Contents

1. General Description

The Hatfield Model Release 4.0 calculates the cost of unbundled network elements (UNEs), universal service funding (USF) requirements, and the cost of carrier access and interconnection through the use of a highly sophisticated costing tool. The computer program chosen to support such a complicated analysis is Microsoft Excel 7.0. The model's calculations are contained in four Excel workbooks; these workbooks include the:

1. *Distribution Module*
2. *Feeder Module*
3. *Switching and Interoffice Module*
4. *Expense Module.*

The Hatfield Model's developers and sponsors believe that a model developed in a readily understandable and ubiquitous spreadsheet program will permit detailed analysis of the Hatfield Model's calculations, algorithms, and user definable inputs. Moreover, the use of Microsoft Excel's auditing tools will allow the user to determine relationships among the Model's various inputs and outputs.

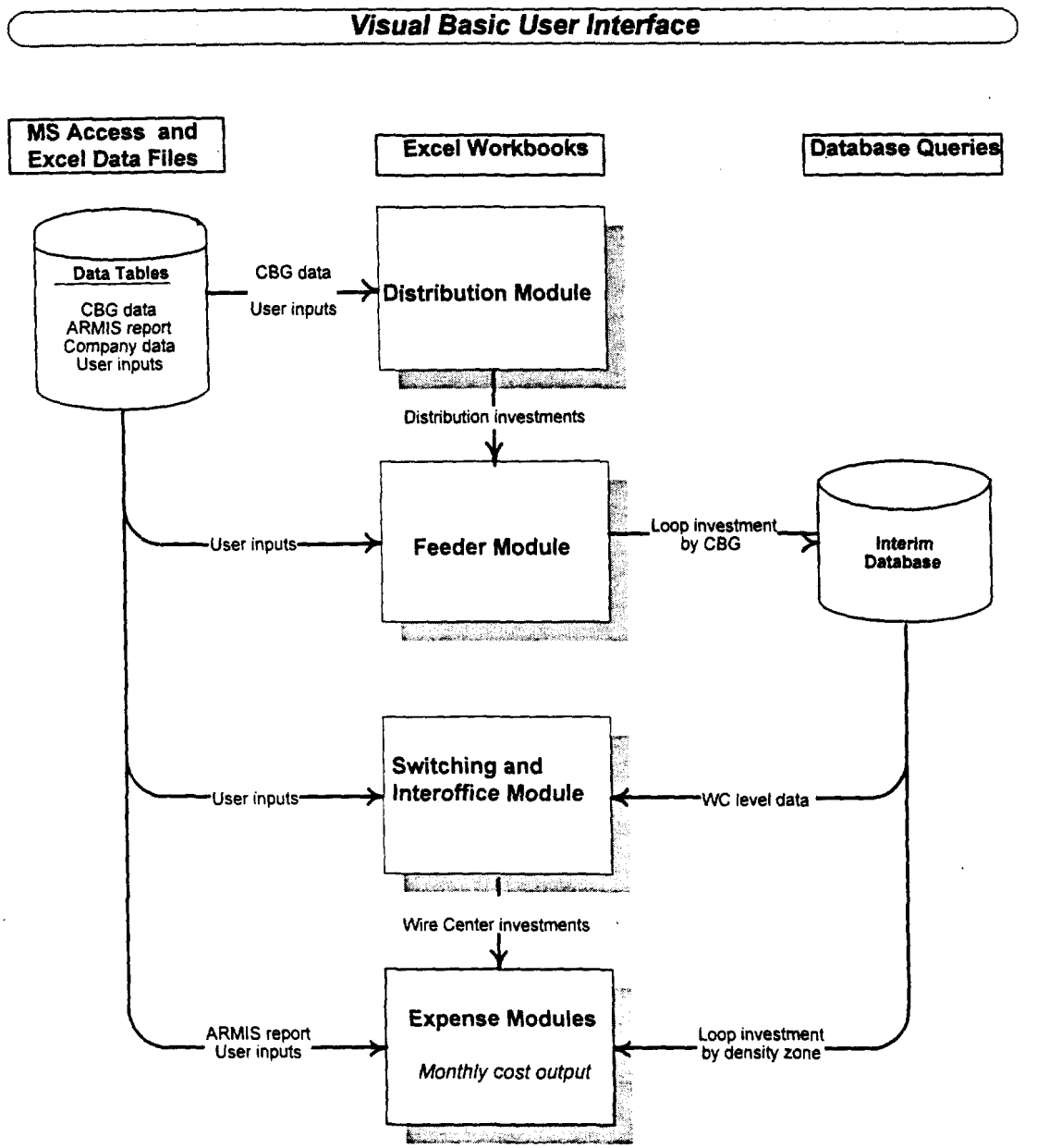
While Hatfield Model Release 4.0 remains a spreadsheet-based model, it uses two Microsoft programming languages -- Visual Basic (VB) and Visual Basic for Applications (VBA) -- and a database to integrate the Hatfield Model's four calculating modules. (See Model flowchart on the following page.) The use of programming code and macros allows the model to run with only limited user intervention as the programming code copies and pastes intermediate results and data among modules. Most importantly, the Hatfield Model no longer requires a "super-PC" to operate. Although the recommended PC is a 133 to 200 MHz Pentium with 64Mb of RAM, the Hatfield Model 4.0 will operate on less capable machines as well.

Hatfield Model Release 4.0 takes advantage of Microsoft's object oriented structure to enhance the model's speed and functionality. SQL database queries have removed the need for complex and time consuming data aggregation functions within Excel, permitting the model to calculate quickly and produce results at various levels of aggregation.

Specifically, two calculations are performed within the database. First, the database aggregates investment results from the CBG level to the Wire Center and Density Zone levels. Second, the database assigns switching and interoffice investments (which are developed on a per-line basis) to each CBG. In both cases the calculations are simple arithmetic, and can be externally verified by the user. Use of the database increases the efficiency of the model, but does not compromise its auditability.

To further enhance the Model's auditability, an Excel "workfile" is generated with each run to keep track of the intermediate results of each module. Using this workfile, the user can trace the development of investment results through each of the calculating modules.

HATFIELD MODEL 4.0
Module Flowchart



2. System Requirements

In order to run Hatfield Model Release 4.0, your PC should meet the following requirements:

- 133 to 200 MHz Pentium processor*
- 64 megabytes of RAM*
- SVGA monitor set to 800 x 600 (or higher) display resolution
- 200 megabytes of available hard drive capacity
- Microsoft Windows NT or Windows 95 operating system
- Microsoft Office Professional 95 (preferred), or at a minimum, Microsoft Excel Version 7.0

The items marked with an asterisk (*) are recommended requirements, and should be followed if the Model is to be used for large companies in large states (i.e., California, New York, or Texas). For smaller companies, the Model will function on a smaller PC.

Please note that the preferred application software is Microsoft Office Professional for Windows 95 that incorporates Excel 7.0, Access 7.0, and Word for Windows 7.0.[1] Use of this complete suite of Microsoft products will ensure that all file libraries that are needed to run the model will be installed. In addition, Word for Windows 7.0 permits users to examine the Model's documentation in electronic form, and Access 7.0 will permit the user to examine the Model's input data more readily.

Users wishing to run the Model having only a stand-alone installation of Excel 7.0 should examine the "Readme.txt" file on the Model's home directory or Section 7 of this documentation for instructions on how to ensure that their computer's installation of supporting file libraries for Excel 7.0 is sufficient to run the model.

[1] Please note that the Hatfield Model Release 4.0 has not been developed and tested to operate under the Microsoft Office 97 suite of applications programs. Because of certain inabilities of Office 97 programs to execute code developed under Office 95, the Hatfield Model Release 4.0 does not currently run successfully in an Office 97 environment. The Hatfield Model developers have been working with Microsoft to identify the source of these incompatibilities, and hope that shortly the model will execute successfully in either the Office 95 or Office 97 environment.

3. Installation Instructions

Hatfield Model Release 4.0 ships as a single self-extracting installation file. In order to install your copy of the Hatfield Model 4.0 please follow these directions.

1. Ensure that your personal computer and its software meets the system requirements described in Section 2.

2. Place the Hatfield Model 4.0 CD-ROM in your PC's CD-ROM drive.

3. Locate and double click on the *File Manager* or *Windows Explorer* icon.

4. Double click on the icon for your computer's CD-ROM drive.

5. Double click on the Hatfield Model Release 4.0 installation icon. The model will first check to see if a previous installation of Release 4.0 of the Hatfield Model exists on your computer. If a previous installation is found, you will be queried as to whether you wish this previous installation to be deleted, or the current installation process aborted. If you wish to retain your old installation of Release 4.0, you should choose to abort the installation process and use Windows File Manager or Explorer to change the name of the old installation's *HM40.exe* file to another name. You may then rerun the current installation process.[2]

6. The model will run a self-extraction routine that will install the Model and all of its components on your computer's internal hard drive.

7. You are now ready to run the Hatfield Model Release 4.0.

[2] Note that if you decide to preserve your previous installation of the Hatfield Model Release 4.0, only the most recent installation will be "active" and be executed when you click on the Model's icon or entry in the Start menu.